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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,286

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Thomas Farrell

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08/04/2008

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EXAMINER

NIU, XINNING

ART UNIT

PAPER NUMBER

2828

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,286	FARRELL ET AL.	
	Examiner	Art Unit	
	XNNING NIU	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 24, 34, 35, 37, 43, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (6,658,033).

4. Regarding claim 24, Anderson discloses: allowing the current in respective reflector sections to sweep while supplying one of said reflectors sections with constant current in order to map the hysteresis regions for different phase currents (Col 4, Lines 14-19) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13). Therefore, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (Figure

4, Col3, Lines 7-45); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (Figure 4, Col3, Lines 7-45); repeating the steps. Anderson does not disclose: increasing a second control current/voltage by a step after the positive sweep and increasing a second control current/voltage by a step after the negative sweep. However, Anderson discloses: coupler current as a function of the reflector current (Figure 5, Col 3, Lines 46-64). In order to produce the graph of Figure 5, the laser device must be go through a range of values in the positive and negative directions for both the reflector current (R) and the coupler current (C); one current value (either C or R) must be held constant while the other current is increased and decreased through a range of values; then the current value that was held constant is increased by a step and held while the other current value is scanned through the range of values; this process is repeated until the entire range of current is competed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction, increasing a second control current/voltage by a step, obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction, repeating the previous steps for all the voltages in the range since this is a simpler way of obtaining a output graph for the laser device.

1. Regarding claim 34, Anderson discloses: measured value is non linear (Figure 4, Col3, Lines 7-45).

2. Regarding claim 35, Anderson discloses: coupler current as a function of the reflector current (Figure 5, Col 3, Lines 46-64). In order to produce the graph of Figure 5, the laser device must go through a range of values in the positive and negative directions for both the reflector current (R) and the coupler current (C); one current value (either C or R) must be held constant while the other current is increased and decreased through a range of values; then the current value that was held constant is increased by a step and held while the other current value is scanned through the range of values; this process is repeated until the entire range of current is completed.

Anderson does not disclose: (a) obtaining a first set of measurement values for the output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time; (b) increasing one of the first or second control currents by a step; (c) obtaining a second set of measurement values for the output of the laser diode by increasing the second control current through a range of values in a positive direction and decreasing a first control current in a negative direction at the same time; and (d) repeating Steps (a) - (c) until a sufficient range of the first and the second control current has been used, wherein total control currents to the laser are changing at a continuous rate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by obtaining the

measurement values of the laser device as claimed because it is a different way of taking the data necessary to produce the output graph of Figure 5 in Anderson.

3. Regarding claim 37, see the rejection for claim 24.
4. Regarding claim 43, see the rejection for claim 35
5. Regarding claim 45, see the rejection for claim 24. The current source control, the meter, an increment control and a repetition control are inherent in the system of Anderson.
6. Claims 25-33, 36, 38-42, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (6,658,033) in view of Liou (4,835,779).
7. Regarding claims 25 and 36, Anderson discloses the claimed limitations except: a computer readable medium having stored therein instructions for causing a processor execute the method of claim 24. However, Liou discloses: a computer (61) (which inherently contains a computer readable medium) controlling a signal modifier (62) which in turn controls a laser diode (Figure 5, Col 5, Lines 45-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using a computer to control and find regions of hysteresis in order to easily process the data.

8. Regarding claims 26 and 38, Anderson as modified discloses the claimed invention except: applying a Laplacian operator to the resultant data set. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by applying a Laplacian operator to the resultant data set since it is easier to interpret the data in the frequency domain.

9. Regarding claims 27 and 39, Anderson discloses the claimed limitations except: photodiode used to obtain the output of the laser diode. Liou discloses: using a photodiode to obtain the output from a laser (Col 4, Lines 4-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by incorporating a photodiode in order to measure the output laser value.

10. Regarding claims 28 and 40, Anderson discloses the claimed limitations except: transmitting the output of the laser to a photodiode via an optical filter. Liou disclose: laser output transmitted to an optical filter (Figure 3, Col 5, Lines 25-41). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by adding a wavelength filter between the laser and the photodiode in order to clean up output of the laser.

11. Regarding claims 29 and 30, Anderson discloses current is controlled in both the reflector and phase sections of the laser (see rejection for claim 24). Anderson does not disclose: measurement values are obtained by measuring the current on a section of the laser when voltage is used to control the laser output. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using voltage or current to control the laser and measuring voltage or current since voltage and current are interrelated values.

12. Regarding claim 31, Anderson as modified disclose: photodiode used to measure the output of the laser device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson as modified by passing the signal outputted from the photodiode to the computer and analyze the data on a log scale in order to determine the single mode properties of the laser device.

13. Regarding claims 32 and 41, Anderson as modified discloses the claimed invention except: applying an erosion operator to the resultant data set. It would have been obvious to one having ordinary skill in the art at the time the invention was made to interpret the by applying numerical operators in order to obtain the desired information.

14. Regarding claims 33 and 42, Anderson discloses the claimed limitations except: first and second current is increased in an increment that is below a predetermined threshold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the increase in current, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

15. Regarding claim 44, Anderson discloses: obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction (reflector current R is increased from a start value to a maximum value and then falls back to said start value) (Figure 4, Col3, Lines 7-45); increasing a second control current/voltage by a step (phase current is increased and decreased as shown on the Y axis of figure 5) (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction (curve 15 is the output from increasing the current, curve 16 is the output for decreasing current) (Figure 4, , Col3, Lines 7-45); increasing a second control current/voltage by a step (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13); identifying regions of hysteresis (Figure 5, Col 3, Lines 47-67, Col 4, Lines 1-13). The current source control, the meter,

an increment control and a repetition control are inherent in the system of Anderson. Anderson does not disclose: a computing apparatus for identifying regions of hysteresis in a resultant data set. However, Liou discloses: a computer (61) (which inherently contains a computer readable medium) controlling a signal modifier (62) which in turn controls a laser diode (Figure 5, Col 5, Lines 45-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the laser device of Anderson by using a computer to control and find regions of hysteresis in order to easily process the data.

Response to Arguments

16. Applicant's arguments with respect to claims 24-45 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XNNING NIU whose telephone number is (571)270-1437. The examiner can normally be reached on M-T, 7:30-5:00 EST, Alternate Fridays 7:30-4:00 ES.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/526,286
Art Unit: 2828

Page 10

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/Xinning(Tom) Niu/
Examiner, Art Unit 2828
07/24/2008

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828